publication of the second part of Gordan's "Vorlesungen über Invariantentheorie" in 1887. Gordan's famous theorem is on the finiteness of the form-system of one or more binary forms. After a slight introduction, the subject is discussed under six heads, viz. Mertens' demonstration and Hilbert's first proof of the theorem; Hilbert's general proof for forms in *n* variables; Deruyts' researches in enumeration of covariants of given characteristics; Hilbert's theorem upon syzygies of higher orders; miscellaneous topics; and the writer winds up with desiderata and remarks upon courses of instruction. It will be gathered from the above selection of headings that the report is likely to be useful to students. There are numerous references, which we hope are more accurate than the following footnote on the first page, which cites Sylvester's proof of the theorem; thus "Proc. Lond. Math. Soc., vol. 27 (1878), p. 11–13." There is a remarkable muddle here. Vol. xxvii. gives *Proceedings* of Session 1895–6, the *Proceedings* of 1878 appear partly in vol. ix. and partly in vol. x., and no reference to such communication occurs in the index to the first twenty volumes of the *Proceedings*.—Miss C. A. Scott discusses Holgate's translation of Reye's "Geometrie der Lage."—Prof. M. Bôcher gives an account of Burkhardt's "Funktionentheoretische Vorlesungen," vol. i., einführung in die Theorie der analytischen Functionen einer complexen Veränderlichen. The little work is said to be a useful introduction not merely to those parts of the theory which have been long classical, but also to the many other important developments of the last thirty years.—An extensive review of Darboux's "Leçons sur les Systèmes orthogonaux et les coordonnées Curvilignes," by Prof. E. O. Lovett, which follows, bristles with references to original memoirs.—Prof. J. Pierpont warmly commends the new Mathematical Encyclopædia, the success of which he regards as being mainly due to the genius, energy and courage of a single man, Felix Klein.—Errata, Notes (which are fuller than ever under Prof. Lovett's care), and new publications close the number.

Bollettino della Società Sismologica Italiana, vol. iv., 1898, No. 6.—Vesuvian notices (January–June 1898), by G. Mercalli. Describes the state of the volcano during each month, adding notes on the changes in the depth of the crater and the excentric eruptive apparatus.—Correction [of an error in copying] in the report of the geodynamic observatory of Casamicciola (Ischia) on the Indian earthquake of June 12, 1897, by G. Grablovitz.—Reply to the same, by G. Agamennone.—Mode of utilising already exhausted *Dalle-Moile* dry piles: new "Guzzanti" pile, by C. Guzzanti.—Notices of earthquakes recorded in Italy (October 2–November 26, 1897), by G. Agamennone, the most important being the earthquakes of Porto Maurizio (October 12), the Marches (October 28), Tuscany (November 1–2), and Latium (November 6 and 13), and distant earthquakes of October 18–19, 20, 23, and November 11.

IN the *Journal of Botany* for January, Mr. Herbert Goss gives an account of the finding of *Orchis cruenta* in Cumberland, already alluded to in these columns.—In the number for February, Mr. G. S. West commences a list of the Alga flora of Cambridgeshire, a comparatively unworked ground. The list will comprise 409 species, 35 of them new to the British Isles, and 9 new to science, including a new *Bulbochaete* and a new *Oedogonium*.—Mr. H. C. Hart commences an account of a botanical excursion through the little-known West of Donegal. —Messrs. Britten and Boulger complete their first supplement (1893–1897) of their Biographical Index of British and Irish Botanists.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 9.—"On the Reflection of Kathode Rays." By A. A. Campbell Swinton. Communicated by Lord Kelvin, F.R.S.

The author has investigated the para-kathodic rays, so called by Prof. S. P. Thompson, which in a focus tube proceed from the front surface of the anti-kathode, and cause the green fluorescence of the glass. By means of a tube in which these rays cast the shadow of a wire upon the opposite end of a tubular annex he has studied their magnetic deflection, and finds it to be in a similar direction to that of kathode rays. By means of another tube containing a small Faraday cylinder, into which some of the para-kathodic rays were caused to pass, he has determined that the para-kathodic rays carry negative charges. The author has previously shown that para-kathodic rays produced Röntgen rays, where they strike the glass; they also produce green fluorescence, hence he concludes that para-kathodic rays are simply reflected kathode rays.

The mechanical force exerted by these reflected kathode rays appears to be exceedingly small, and is insufficient to account for the inverse rotation of radiometer wheels, which, as described by the author in the *Phil. Mag.* for October 1898, occurs when the wheels are placed just outside the kathode stream. Indeed, all experiments designed to produce rotation by the impact of reflected kathode rays failed, and in some cases the wheels were found to rotate most persistently in a contrary direction, showing that whatever be the cause of such inverse rotation, it is more potent than the force of impact of the reflected rays.

The reflection of kathode rays is largely diffuse, but not altogether so; experiments with a polished concave platinum reflector, capable of rotation, gave under certain conditions distinct visual evidence of true specular reflection, with equal angles of incidence and reflection. In addition to the specularly reflected rays the anti-kathode reflector was also found under certain conditions to give off a well-defined beam of other rays normal to its surface, which caused fluorescence of the glass. The exact nature of these normal anti-kathode rays calls for further investigation.

The author has studied and quantitatively measured the electric charges carried by reflected kathode rays for different angles of incidence and reflection by means of special apparatus. A tube was constructed for this purpose, in which a polished flat platinum reflector could be set at different angles to the incident kathode rays. This tube was fitted with a movable Faraday cylinder which was capable of rotation round the reflector, so that throughout a single plane the whole field traversed by the reflected kathode rays could be explored. The amount of negative charge imparted to the movable Faraday cylinder at different positions, and with different angles for the reflector, were measured both by a reflecting galvanometer and also by a quadrant electrometer. Many complete series of observations for different positions both of reflector and cylinder were made and all agree in showing that the field of reflected kathode rays is not uniform, but increases more or less gradually on both sides up to a maximum, which always occurs almost exactly at the point that makes the angle of reflection equal to that of incidence.

Further experiments show that the amount of charge carried by the reflected rays increases as the incidence is made more slanting, and that the electrification of the reflector itself, which is strongly negative when the incidence of the primary kathode rays is normal, gradually falls to zero as the incidence is made more slanting, until with very slanting incidence the electrification becomes slightly positive.

The author compares this result with that described by him in the *Roy. Soc. Proc.*, vol. lxiii. pp. 434–435, viz. that kathode rays which strike the anti-kathode normally, are more efficient in producing Röntgen rays than those which impinge upon it very much on the slant.

The author points out that these results support the view that the Röntgen rays are actually due to the electric charges carried by the kathode ray particles being imparted to the anti-kathode.

Entomological Society, February 1.—Mr. George H. Verrall, President, in the chair.—Mr. Champion exhibited specimens of an interesting species of Fulgoridæ, *Atalanta auricoma*, Burm., recently received from British Honduras, and stated that he had found Lepidopterous larvæ in the white waxy matter attached to the body of an allied species, *Enchophora stellifer*, Burm., of which he exhibited a specimen, together with a larva taken from it. He also showed numerous specimens, and pointed out certain peculiarities, of both sexes of an undescribed species of *Apiomerus* (Family Reduviidæ) found by himself in Chiriqui.—Mr. Tutt exhibited on behalf of the Rev. G. H. Raynor a large series of *Spilosoma lubricipeda*, Linn., to show that the extreme aberrations of this species could be produced by inbreeding from comparatively normal forms. He then exhibited a number of closely allied forms of *Anthrocera*, received from M. Oberthür of Rennes, and comprising, among others, *A. medicaginis*, Dup., *A. medicaginis*, Bdv., *A. charon*, Dup., and *A. charon*, Bdv. The first two of these, as probably also the fourth, he referred to *medicaginis*, Bdv., considering them to be possibly forms of *Anthrocera lonicerea;* while the specimens of *A. charon*, Dup., were, he stated, almost indistinguishable from typical *lonicerae.* Mr. Tutt next exhibited some remarkable colour-aberrations of *Anthrocera filipendulae*, captured by Mr. W. H. Harwood near Colchester.—Mr. A. H. Jones exhibited a fine specimen of *Sphaeria robertsi* attached to the larva of *Charagia virescens.*—Mr. Percy T. Lathy communicated "A monograph of the genus *Calisto*"; and the Rev. F. D. Morice, papers entitled "Illustrations of specific characters in the armature and ultimate ventral segments of *Andrena* ♂," and "Notes on *Andrena taraxaci*, Giraud."

Geological Society, February 1.—W. Whitaker, F.R.S., President, in the chair.—On radiolaria in chert from Chypon's Farm, Mullion District (Cornwall), by Dr. G. J. Hinde, F.R.S. This paper describes the discovery of a bed of chert on the mainland, similar to that already described from Mullion Island. The chert is interbedded with clay-slates, and it is a dark massive rock much traversed by quartz-veins; in some parts of it the radiolaria are preserved in an unusually perfect condition, showing their latticed structure and spines very distinctly. The radiolaria for the most part are casts only, without any definite bounding-walls, their outlines being indicated by the dark material of the groundmass, while the interior of the test has been infilled with clear silica, sometimes the cryptocrystalline variety, at others fibrous chalcedony. In the forms showing the structural details, these alone have been replaced by the opaque substance, and are thus clearly defined against the clear silica infilling the test. Eleven species are described, of which ten are new, while one has been previously recognised in the cherts of New South Wales. [At this point, Prof. Bonney took the chair.]—Gravel at Moreton-in-the-Marsh (Gloucestershire), by S. S. Buckman. The author describes certain gravels of Triassic débris and flints at Moreton-in-the-Marsh, with special reference to an upper bed wherein the fragments are mostly in a vertical position, some of them having their heavier ends uppermost. He theorises that the vertical materials were the droppings from melting ice floating down a large river.—On the occurrence of pebbles of schorl-rock from the south-west of England in the drift-deposits of southern and eastern England, by A. E. Salter. A set of twelve representative specimens, consisting essentially of quartz and tourmaline, have been looked over by Prof. Bonney, who informs the author that they consist mainly of felspathic grits, schorl-rock, &c., similar rocks to which occur in the south-west of England. The most westerly point at which the pebbles have been detected is on Great and Little Haldon Hills, 800 feet above Ordnance datum, where they are of larger size, more abundant, and coarser-grained than elsewhere. Thence they are traced to the north and south sides of the Thames Basin, and into East Anglia at Walton-on-the-Naze, Aldeburgh, &c. There is a general decrease in height in the deposit in which the pebbles occur, in passing from west to east, and the pebbles appear to have taken two main courses—one along a peneplain west to east from Dartmoor, the other from south-west to north-east across England. The pebbles are absent from the Weald and from the district around Bagshot, from the Hampshire Basin and its bounding hills (with the exception of the extreme south), and from the highest and presumably oldest gravels north of the Thames.

Linnean Society, February 2.—Dr. A. Günther, F.R.S., President, in the chair.—Mr. E. M. Holmes exhibited specimens of *Schimmelia oleifera*, a native of Venezuela, the wood of which yields an essential oil known in commerce as "West Indian Oil of Sandal-wood." The plant, hitherto undescribed, was found to belong to a new genus of *Rutaceae*, and has been named *Schimmelia*, after the German expert who distilled the oil, and, with considerable difficulty, procured flowering and fruiting specimens of the plant to enable its proper determination.—Prof. Howes exhibited three living specimens of the Lizard *Hatteria*, hatched from eggs which had been received from Prof. Dendy, of Canterbury College, Christchurch, New Zealand, with a view of working out the development of the skeleton. Prof. Howes described the circumstances under which they had been reared, for the first time in Europe, and made some observations on the rupture of the egg-shell. Further remarks were made by the President.—On behalf of Mr. J. Hamilton Leigh, there was exhibited an unskinned example of the Wild Cat, *Felis catus*, which had been trapped on January 31 in Argyllshire, and forwarded to London for preservation. It had all the characteristic features of *Felis catus*, and was of great size, weighing nearly eleven pounds. The President, in commenting upon the occurrence, expressed regret that the rarer Mammalia of Great Britain were daily becoming still more rare for want of that protection which might be accorded to them as well as to birds.—Mr. E. S. Salmon read a paper entitled "Notes on the genus *Nanomitrium*, Lindb." This genus had hitherto been regarded as cleistocarpous. Examination of fresh specimens of *N. tenerum* showed, however, that the capsules possessed a distinct zone of specialised cells—delicate, narrow, and transversely elongated—clearly marking off the upper part of the capsule as a lid. The author pointed out that the characters by which *Nanomitrium* had been separated from *Ephemerum* were insufficient, and considered that the former genus should be limited to *N. tenerum*, *N. Austini*, and *N. synoicum*, referring *N. megalosporum* (and perhaps also *N. aequinoctiale*) to *Ephemerum.* The essential character of the genus *Nanomitrium* was the presence of a zone of differentiated cells, by which a regular dehiscence is effected.—Mr. F. W. Stansfield read a paper "On the Production of Apospory by Environment in *Athyrium Filix-foemina*, var. *unconglomeratum*, an apparently barren Fern." This had been effected by cutting off parts of the immature fronds and allowing them to expand during eighteen months in an uniformly humid atmosphere. The result was the production in the ultimate divisions of a meristematic tissue which gave rise to (1) *gemmae* or bulbils, (2) *prothalli*, producing both apogamous buds and ordinary sexual axes of growth. One of the prothalli had been examined, and found to bear both archegonia and antheridia. On layering the primary fronds produced by apospory, it was found that these readily gave rise to fresh aposporous growths. The ease with which apospory was induced in the primary fronds, as compared with the extreme difficulty in the case of fronds from an older plant, was said to be characteristic of aposporous ferns in general, Mr. Stansfield having observed it in every case (eight in all) in which he had raised ferns by apospory. Assuming the truth of the "recapitulation" theory, he suggested that this fact indicated that apospory was an atavic trait in ferns.—Mr. H. M. Bernard gave an abstract of a paper entitled "Recent *Poritidae* and the position of the Family in the Madreporarian System." In attempting to solve the question as to the affinities of the *Poritidae*, the author adduced reasons for believing that the skeletal formation of *Porites* might be accounted for on the assumption that some early *Madreporaria* acquired the habit of budding before the skeleton was mature. The paper further dealt with all the recent genera which had from time to time been classed with *Porites*, and a revision of the Family was suggested.

Mathematical Society, February 9.—Lieut.-Colonel Cunningham, R.E., Vice-President, in the chair.—Mr. A. Berry communicated a note on a case of divisibility of a function of two variables by another function.—Mr. Love, F.R.S., read a paper on the scattering of electric waves by an insulating sphere. A complete solution is given of the problem of determining the disturbance of a train of plane polarised waves of electric force by a dielectric sphere of any size, and with any difference between the dielectric constants of the material of the sphere and the medium outside it. This solution verifies the first approximation for a very small sphere otherwise obtained by Lord Rayleigh, according to which the direction in which the disturbance in the scattered wave vanishes is at right angles to the direction of propagation of the incident waves. It also shows that in a second approximation, whatever the difference of dielectric constants may be, the direction in which the disturbance in the scattered wave vanishes is inclined at a slightly obtuse angle to the direction of propagation of the incident waves. Prof. Lamb, F.R.S., and Dr. J. Larmor, F.R.S., spoke on the subject.—Mr. A. E. Western gave an account of his paper on groups of order p^3q, and also communicated a paper, by Dr. L. E. Dickson, entitled "The group of linear homogeneous substitutions on mq variables which is defined by a certain invariant."—Mr. A. Young read a paper on the irreducible concomitants of any number of binary quartics.—The following were communicated in abstract: On a certain minimal surface and on a solution of $\nabla^2 V = 0$, by Mr. T. J. Bromwich. In the first part, the author investigates the condition that the plane $lx + my + nz = p$ should envelope a minimal surface. This is found to be $\frac{\partial^2 p}{\partial l^2} + \frac{\partial^2 q}{\partial m^2} + \frac{\partial^2 r}{\partial n^2} = 0$, a result previously given by Prof. Genese (*Quarterly Journal of Mathematics*, 1875). The known surfaces of the heliçoid and catenoid are proved to be deducible from this result. Comparing this with an expression for p in terms of l, m, n given by Darboux ("Théorie des Surfaces"), we are led to a type of solution of $\nabla^2 V = 0$, which seems to be related to the forms given by Prof. Forsyth in the *Messenger of Mathematics*, 1897. In the second part of the paper, Mr. Bromwich investigates this solution and allied forms.—On the complete system of differential covariants of a single Pfaffian expression, and of a set of Pfaffian expressions, by Mr. J. Brill; and the figure of Jacobi with respect to a linear system of hyperquadrics, by Prof. P. H. Schoute.

Royal Meteorological Society, February 15.—Mr. F. C. Bayard, President, in the chair.—Mr. E. Mawley read his annual report on the phenological observations, and stated that the weather of the past year, taken as a whole, had been throughout the British Isles very warm and dry. Wild plants blossomed much in advance of their average dates until about the end of March, but after that time until the close of the flowering season they were mostly late in coming into bloom. Favoured by the rains in May, the crop of hay was everywhere a remarkably heavy one, but the long drought which followed dried up the pastures and caused a scanty yield of roots. The dry season suited the cereals admirably, and especially the wheat, of which there was a very abundant crop. The yield of barley was nearly as exceptional, while that of oats, except in the north-east of England, and in Scotland, was also unusually good. There was a splendid crop of potatoes in Ireland and in parts of Scotland, but elsewhere the yield was on the whole moderate. Apples, pears and plums flowered abundantly, but adverse weather conditions, and the dry subsoil in the spring, caused an irregular "set" of fruit; so that in all parts of the kingdom these crops were, as a rule, below average. On the other hand, there were good crops of all the smaller fruits.—A paper by Prof. W. M. Davis, of Harvard University, U. S., on the circulation of the atmosphere, was read by the Secretary. The author said that although the circulation of the atmosphere is one of the earliest and one of the latest problems of meteorology, its treatment is ordinarily inadequate, inasmuch as the serious student seldom gains from the text-books in current use a comprehensive view of the great problem. After giving a brief historical development of the subject, the author went more particularly into the question of the outflowing polar winds, especially in the Antarctic regions. He called attention to the remarks made by Dr. Buchan at the conference on the "Scientific advantages of an Antarctic expedition," held at the Royal Society last year, and maintained that Prof. W. Ferrel's views on the circulation of the atmosphere, so far as they touch Antarctic winds and pressure, had been misunderstood by Dr. Buchan. Prof. Davis said that it must certainly be clear to every physical meteorologist, that the conventional circulation of the atmosphere, as ordinarily stated, was seriously incompetent, for the most striking features in the distribution of atmospheric pressure are not accounted for by it. As long as the effect of the winds in modifying the distribution of pressure is left out of consideration, no broad understanding of atmospheric processes can be reached.

Cambridge.

Philosophical Society, January 23.—Mr. J. Larmor, President, in the chair.—On the formation of clouds with ozone, by J. S. Townsend. The clouds which are formed when oxygen containing ozone is passed through a solution of potassium iodide, or sodium metabisulphite, are treated of in this paper. Experiments were described which showed that the formation of these clouds is due to the escape of iodine, or sulphur dioxide, from the solution. When oxygen containing small quantities of iodine vapour or sulphur dioxide is passed into a flask containing ozone a cloud is immediately formed. The cloud disappears when the gas in which it is suspended is dried, and reappears again in the presence of moisture.—(*a*) On detectors of radiant heat. (*b*) On the symbolic integration of of certain differential equations in quaternions, by H. C. Pocklington.—On the motion of a charged ion in a magnetic field, by Prof. J. J. Thomson. In this paper the motion of an ion moving through a gas dense enough for viscosity to make the velocity of the ion proportional to the force acting upon it is discussed. If H is the magnetic force, F the electric force, θ the angle between H and F, v_0 the velocity acquired by the ion under unit potential gradient, it is shown that the velocity of the ion at any point will have a component proportional to F along the line of electric force, a component proportional to $Hv_0F \sin\theta$ along the line at right angles to H and F, and a component proportional to $H^2v_0^2F \cos\theta$ along the line of magnetic force. The relative importance of the three components depends upon the value of Hv_0; if this is large, the ions follow the lines of magnetic force; if it is small, they follow the lines of electric force, while in intermediate cases they pursue a spiral path. Thus if we suppose the magnetic force to be constant, and consider two different kinds of ions moving with different speeds under unit potential gradient, the more quickly moving ions may travel along the lines of magnetic force, while the more slowly moving ones may travel along spirals. In the discharge of electricity through gases it has been found whenever the velocity of the ions has been measured that the velocity of the negative ion exceeds that of the positive. The author has shown in a paper recently communicated to the *Philosophical Magazine* that this difference between the velocities of the positive and negative ions will account for many of the remarkable differences between the appearances at the kathode and anode of a discharge tube. The results given in this paper show that it will also account for the difference between the behaviour of the negative glow and positive column in a magnetic field. Plücker showed that in strong magnetic fields the negative glow follows the lines of magnetic force; the positive column, on the other hand, does not do so, but pursues a more or less spiral path. This is what we should expect if the negative glow marks the path of rapidily moving negative ions, for which Hv_0 is large; in the positive column, on the other hand, we have to do with more slowly moving positive ions for which Hv_0 is not large enough to allow us to neglect the components of the velocity along F and at right angles to F and H in comparison with the velocity along H; when this is the case, the path of the ion is a spiral.

Paris.

Academy of Sciences, February 13.—M. van Tieghem in the chair.—Notice on the life and work of the late Sir George Henry Richards, correspondent in the Section of Geography and Navigation, by M. Hatt.—On the heat of formation of anhydrous lime, starting from its elements, by M. Henri Moissan. The author has taken advantage of the purity of the calcium obtained by his methods to re-determine the heat of solution in water. The heat of formation of lime thus obtained, 145 calories, is greater than that of the oxides of sodium, potassium, and lithium; and direct experiment showed that this last metal could be obtained by heating together lithia and calcium in a vacuum.—On the mechanism of the thermal phenomena connected with the elasticity of solid bodies, animate or inanimate, by M. A. Chauveau.—On experimental typhoid infection in the dog, by MM. R. Lépine and B. Lyonnet. After injection of a virulent typhoid culture into the dog, the number of white corpuscles in the blood was modified, some bacilli were excreted by urine and bile, and the remaining bacilli appeared to be localised in the liver and spleen. After some days the blood serum acquired the agglutinating power, but the animal preserved every appearance of health, although for some weeks afterwards, living bacilli could be found in the liver and spleen. —Contribution to the study of animal chlorophyll. The chlorophyll of the hepatic organ of Invertebrates, by MM. A. Dastre and N. Floresco. The hepatic chlorophyll is of alimentary origin; it is a vegetable chlorophyll which is fixed in a very persistent manner by the hepatic cells.—On an ancient fall of shooting-stars, by M. D. Eginitis. A historical study of the probable nature and identification of the asteroid swarm mentioned as occurring in the reign of Constantine. The date was probably the autumn of 752: the swarm identical with the Andromides.—Comparative measures of chemical intensity during the eclipse of the moon of December 27, 1898, by M. Th. Moreux. The results of the photometric measurements of luminous intensity, of chemical intensity, and of the theoretical luminous intensity are plotted graphically. The three curves do not coincide.—On a series of powers that are always divergent, by M. S. Pincherle.—On the algebraic integrals of the equation of Riccati, by M. Léon Autonne.—On the elastic arch, by M. Georges Poisson.—On the propagation of a gradual elongation in an elastic wire, by M. L. de la Rive. —Influence of magnetism upon the heat conductivity of iron, by M. Désiré Korda. It is found that the heat conductivity of soft iron decreases in the direction of the magnetic lines of force, but remains constant in the direction of equipotential lines, independently of the sense of the magnetising force.—On a particular case of electric oscillations produced by a Ruhmkorff coil with open secondary circuit, and on a new method of measuring electric capacities, by MM. J. J. Borgman and A. A. Petrowsky. By the method given it is possible to measure capacities of a fraction of an electrostatic unit.—On the transformation of the X-rays by different substances, by M. Hurmuzescu.—The graphical method in the study of vowels, by M. Marage. The method employed was the photography of manometric flames, and diagrams are given for the curves of seven vowel sounds.—On phosphorescent strontium sulphide prepared by means of strontium carbonate and sulphur vapour, by M. J. R. Mourelo. Pure strontium carbonate gave a white, non-phosphorescent sulphide, the best phosphorescence being obtained by using native strontianite.—Combinations obtained with fatty aldehydes and mercuric sulphate, by M. G. Benigès. Acetaldehyde gives a crystallised compound with mercuric sulphate, formaldehyde deposits mercurous sulphate only.—A new method for the qualitative and quantitative examination of the albuminoids, diastases, alkaloids, and leucoptomaines in urine, by M. Paul Chibret. An application of a solution of iodine in potassium iodide. Cocaine hydrochloride is used to obtain a standard turbidity.—On orthoxy-phenoxyacetone, by M. Charles Moureu.—On a synthesis of hydroxylamine, by M. Ad. Jouve. The reaction between nitric oxide and hydrogen, in which ammonia and water are the chief products, can be shown under certain temperature conditions (115°-120°) to give a small quantity of hydroxylamine. The base was separated from the ammonium chloride simultaneously formed by means of alcohol, and identified both by its reactions and by analysis.—On the purity of the trimethylene prepared by the action of zinc powder and alcohol upon trimethylene bromide, by M. Gustavson. In reply to the criticisms of MM. Wolkoff and Menschutkin, it is shown that pure trimethylene may give rise with bromine to propylene bromide, and hence that the production of this latter substance is not a proof of the presence of propylene in the original gas.—On the tests for methyl alcohol in alcoholic liquids, by M. A. Trillat.—The fermentation of saccharides, by M. E. Dubourg.—On a mode of action of *Bacillus subtilis* in phenomena of devitrification, by Mlle. A. Fichtenholtz. *B. subtilis* was grown in nutrient solutions, in which no nitrogen was present except as potassium nitrate. The latter was converted into ammonia.—The yeasts as parasites, in their relations to Sorghum blight, by M. Radais.—Explanation of the formation of twins by mechanical action, by M. Fréd. Wallerant.—Variation of acuteness of vision with azimuth. Modification of the section of the cone by astigmatic accommodation, by M. André Broca.—Influence of slight traction upon the excitability of a nerve, by M. G. Weiss.—On the development of *Convoluta Roscoffensis*, by M. Jivoïn Georgévitch.—On three new Orthonectida, parasites of the Annelids; and the hermaphrodism of one of them (*Staecharthrum Giardi*), by MM. Maurice Caullery and Félix Mesnil.—On the seeds of *Allanblackia floribunda*, and on the Bouandja butter which it contains, by M. Edouard Heckel.—Modifications in the primary bark of the Dicotyledons, by M. Eberhardt.—On the structure of the Brianconnais, by M. P. Termier.

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 23.

ROYAL SOCIETY, at 4.30.—On the Order of Appearance of Chemical Substances at different Stellar Temperatures; Sir J. N. Lockyer, F.R.S.—The Efficiency of Man, or Economic Coefficient of the Human Machine: Dr. Marcet, F.R.S., and R. B. Floris.—Some Experiments bearing on the Theory of Voltaic Action: J. Brown.—Deposition of Barium Sulphate as a Cementing Material of Sandstone: Dr. F. Clowes.

ROYAL INSTITUTION, at 3.—Toxins and Antitoxins: Dr. Allan Macfadyen.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.

FRIDAY, FEBRUARY 24.

ROYAL INSTITUTION, at 9.—Coherers: Prof. Oliver Lodge, F.R.S.

PHYSICAL SOCIETY, at 5.—The Joule-Thomson Thermal Effect: E. F. J. Love.—(1) A Study of an Apparatus for the Determination of the Rate of Diffusion of Solids dissolved in Liquids; (2) Note on the Source of Energy in Diffusive Convection; Albert Griffiths.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Loss of Heat from Buildings: R. Gordon Mackay.

SATURDAY, FEBRUARY 25.

ROYAL INSTITUTION, at 3.—Mechanical Properties of Bodies: Lord Rayleigh, F.R.S.

ESSEX FIELD CLUB (at Technical Institute, Stratford), at 6.30.—British Well-Worms (*Phreoryctes*), with special reference to a Unique Specimen from Chelmsford: Rev. Hilderic Friend.—On a Neolithic "Fascine" Lake Settlement at Skitts Hill, Braintree, Essex: Rev. J. W. Kenworthy.—Some Illustrations of Pond-Life: D. J. Scourfield.

MONDAY, FEBRUARY 27.

SOCIETY OF ARTS, at 8.—Cycle Construction and Design: Archibald Sharp.

IMPERIAL INSTITUTE, at 8.30.—The Right and Wrong Routes to the Klondyke Goldfields: E P. Rathbone.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Travels and Researches in Rhodesia: Dr. H. Schlichter.

INSTITUTE OF ACTUARIES, at 5.30.—Some Notes on Life Assurance in Greater Britain, particularly with reference to the Work and Development of the Native Offices: Arthur Wyndham Tarn

TUESDAY, FEBRUARY 28.

ROYAL INSTITUTION, at 3.—Morphology of the Mollusca: Prof. E. Ray Lankester, F.R.S.

SOCIETY OF ARTS (Foreign and Colonial Section), at 4.30.—Persian Trade Routes: A. Hotz.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Improvements in Dioptric Apparatus for Lighthouses: W. T. Douglass and J. A. Purves.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.—Apparatus for Animated Photography: Birt Acres.

WEDNESDAY, MARCH 1.

SOCIETY OF ARTS, at 8.—Leadless Glazes: Wilton P. Rix.

ENTOMOLOGICAL SOCIETY, at 8.

THURSDAY, MARCH 2.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Perturbations of the Leonids: Dr. G. J. Stoney, F.R.S., and Dr. Downing, F.R.S.—On Flapping Flight of Aeroplanes: Prof. M. F. Fitzgerald.—On Hydrogen Peroxide as the Active Agent in producing Pictures on a Photographic Plate in the Dark: Dr. Russell, F.R.S.

ROYAL INSTITUTION, at 3.—Toxins and Antitoxins: Dr. Allan Macfadyen.

LINNEAN SOCIETY, at 8.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Wireless Telegraphy: G. Marconi.

CHEMICAL SOCIETY, at 8.—Bromomethylfurfuraldehyde: H. J. H. Fenton and Mildred Gostling.—The Action of Metallic Thiocyanates on certain Substituted Carbamic and Oxamic Chlorides, and a New Method for the Production of Thiobiurets: Dr. Augustus Edward Dixon.—Ethylic ββ-Dimethylpropane Tetracarboxylate: W. Trevor Lawrence.—The Action of Alkyl Iodides on Hydroxylamine: Prof. Wyndham R. Dunstan, F.R.S., and Ernest Goulding.

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SATURDAY, MARCH 4.

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